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YUEN, KAN	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/686,658	Applicant(s) DUNAGAN ET AL.
	Examiner Kan Yuen	Art Unit 2616

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 05 September 2007.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-40,42 and 44-52 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-5,7-17,19-33,35-40,42 and 44-52 is/are rejected.

7)☐ Claim(s) 6,18 and 34 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 9/5/2007.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

Response to Arguments

1. Applicant's arguments with respect to claims 1, 23, 40 and 48 have been considered but are moot in view of the new ground(s) of rejection.

Allowance Withdrawal

2. The allowability of claim 43 issued in the previous office has been withdrawn.

Claim Rejections - 35 USC § 103

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1, 3, 7-13, 23, 25-30, 35, 48-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya et al. (Pub No.: 2003/0185148), in view of Saleh et al. (Pat No.: 6801496).

For claim 1, Shinomiya et al. disclosed the method of ascertaining a failure; and when the failure is ascertained, signaling a failure notification to each node in the failure notification group and executing the failure handling method to perform an application level action (see paragraph 0014, lines 1-25). In the reference, once a node detects a fault node, the node will send a fault notification message to other node in a group, where the sending is to perform an application level action. However, Shinomiya et al. did not explicitly disclosed the method of creating a failure notification group comprising the plurality of nodes, wherein the failure notification group has a unique identifier; associating with the unique identifier of the failure notification group a failure handling method of a distributed application running on some or all of the nodes of the failure notification group. Saleh et al. from the same or similar field of endeavor teaches the method of creating a failure notification group comprising the plurality of nodes, wherein the failure notification group has a unique identifier (see column 2, lines 13-20, and see

column 5, lines 39-47, and see fig. 2). As shown, the nodes are created into zones or groups, and each zone has a zone ID or unique identifier; associating with the unique identifier of the failure notification group a failure handling method of a distributed application running on some or all of the nodes of the failure notification group (see column 4, lines 16-35). Each zone boundary node can be used to limit the flow of topological information. Each zone can be configured to run a separate copy of the topology distribution process, and nodes within each zone are only required to maintain information about their own zone, therefore each node in the zone is running the same application to maintain their zone information. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Saleh et al. into the network of Shinomiya et al. The motivation for using the method as taught by Saleh et al. in the network of Shinomiya et al. being that it full restoration may be used between two zones.

Regarding to claim 3, Shinomiya et al. did not disclose the method of verifying that each node in the failure notification group exists and generating the unique identifier for the failure notification group if each node in the failure notification group is successfully contacted. Saleh et al. also teach the method of verifying that each node in the failure notification group exists and generating the unique identifier for the failure notification group if each node in the failure notification group is successfully contacted (see column 4, lines 40-55). Each group of nodes has a boundary node that maintains two databases, one is for storing link-state of connection to other zone, and other is for store link-state of connection among nodes within the zone. Thus, it would have been

obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Saleh et al. into the network of Shinomiya et al. The motivation for using the method as taught by Saleh et al. in the network of Shinomiya et al. being that it provides link state information among nodes within each zone to monitor the activeness of each node.

Regarding to claim 7, Shinomiya et al. also disclosed the method of signaling a failure notification includes sending a failure notification message to nodes in the failure notification group (see paragraph 0053, lines 1-5).

Regarding to claim 8, Shinomiya et al. also disclosed the method of signaling a failure notification includes failing to respond to a communication request from a node in the failure notification group (see paragraph 0046, lines 1-6). As shown in the reference, faulty notification message is created when the network detects a faulty node. A faulty node can be either malfunctioning or not responsive.

Regarding to claim 9, Shinomiya et al. also disclosed the method of signaling a failure notification includes failing to respond only to communication requests related to a failure notification group for which a failure has been ascertained (see paragraph 0039, lines 1-5 and see paragraph 0046, lines 1-6, and fig. 1). As shown in the reference, once the fault notification is generated, it passes to all nodes in the group.

Regarding to claim 10, Shinomiya et al. also disclosed the method of ascertaining a failure includes ascertaining a failure in a communication link to at least one other node in the failure notification group (see paragraph 0039, lines 1-5 and see paragraph 0046, lines 1-6, and fig. 1).

Regarding to claim 11, Shinomiya et al. also disclosed the method of ascertaining a failure includes receiving from the application an instruction to signal the failure notification (see paragraph 0046, lines 1-6). As shown in the reference, faulty notification message is created when the network detects a faulty node. A faulty node can be either malfunctioning or not responsive. The instruction is to pass the notification message to neighbor nodes.

Regarding to claim 12, Shinomiya et al. also disclosed the method of ascertaining a failure includes having failed to repair the failure notification group one or more times (see paragraph 0054, lines 1-5). In the reference, the method is used to repair the failed node by switching to a difference path.

Regarding to claim 13, Shinomiya et al. also disclosed the method of ascertaining a failure includes distinguishing between a communication failure between two nodes that are both in the failure notification group (see paragraph 0046, lines 1-6). As shown in the reference, faulty notification message is created when the network detects a faulty node. The faulty node in the group causes disconnection between nodes. However, Shinomiya et al. did not disclose the method of a communication failure between two nodes that are not both in the failure notification group. Saleh et al. also teach the method of a communication failure between two nodes that are not both in the failure notification group (see column 4, lines 40-55, and see fig. 2). Each group of nodes has a boundary node that maintains two databases; one of the databases is for storing link-state of connection between other zones, and to detect link state between its own zone and other zone. Thus, it would have been obvious to the person

of ordinary skill in the art at the time of the invention to use the method as taught by Saleh et al. into the network of Shinomiya et al. The motivation for using the method as taught by Saleh et al. in the network of Shinomiya et al. being that it full restoration may be used between two zones.

Regarding to claim 23, Shinomiya et al. also disclosed the method ofascertaining a failure; and when the failure is ascertained, signaling a failure notification to each node in the failure notification group and executing the failure handling method to perform an application level action (see paragraph 0014, lines 1-25). In the reference, once the faulty node is detected by a node, the node will send a fault notification message to other node in a group, where the sending is to perform an application level action. However, Shinomiya et al. did not explicitly disclose the method of creating a failure notification group comprising the plurality of nodes, wherein the failure notification group has a unique identifier; associating a failure handling method of an application with the unique identifier of the failure notification group. Saleh et al. also teach the method of creating a failure notification group comprising the plurality of nodes, wherein the failure notification group has a unique identifier (see column 2, lines 13-20, and see column 5, lines 39-47, and see fig. 2). As shown, the nodes are created into zones or groups, and each zone has a zone ID or unique identifier; associating with the unique identifier of the failure notification group a failure handling method of a distributed application running on some or all of the nodes of the failure notification group (see column 4, lines 16-35). Each zone boundary node can be used to limit the flow of topological information. Each zone can be configured to run a separate copy of

the topology distribution process, and nodes within each zone are only required to maintain information about their own zone, therefore each node in the zone is running the same application to maintain their zone information. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Saleh et al. into the network of Shinomiya et al. The motivation for using the method as taught by Saleh et al. in the network of Shinomiya et al. being that it full restoration may be used between two zones.

Regarding to claim 25, Shinomiya et al. also disclosed the method of signaling a failure notification includes sending a failure notification message to nodes in the failure notification group (see paragraph 0014, lines 1-25). In the reference, once the faulty node is detected by a node, the node will send a fault notification message to other node in a group.

Regarding to claim 26, Shinomiya et al. also disclosed the method of signaling a failure notification includes failing to respond to a communication request from a node in the failure notification group (see paragraph 0046, lines 1-6). As shown in the reference, faulty notification message is created when the network detects a faulty node. A faulty node can be either malfunctioning or not responsive.

Regarding to claim 27, Shinomiya et al. also disclosed the method of signaling a failure notification includes failing to respond to only communication requests related to a failure notification group for which a failure has been ascertained (see paragraph 0039, lines 1-5 and see paragraph 0046, lines 1-6, and fig. 1). As shown in the reference, once the fault notification is generated, it passes to all nodes in the group.

Regarding to claim 28, Shinomiya et al. also disclosed the method of ascertaining a failure includes ascertaining a failure in a communication link to at least one other node in the failure notification group (see paragraph 0039, lines 1-5 and see paragraph 0046, lines 1-6, and fig. 1).

Regarding to claim 29, Shinomiya et al. also disclosed the method of ascertaining a failure includes receiving from the application an instruction to signal the failure notification (see paragraph 0046, lines 1-6). As shown in the reference, faulty notification message is created when the network detects a faulty node. A faulty node can be either malfunctioning or not responsive. The instruction is to pass the notification message to neighbor nodes.

Regarding to claim 30, Shinomiya et al. also disclosed the method of ascertaining a failure includes having failed to repair the failure notification group one or more times (see paragraph 0054, lines 1-5).

Regarding to claim 35, Shinomiya et al. also disclosed the method of ascertaining a failure includes distinguishing between a communication failure between two nodes that are both in the failure notification group (see paragraph 0046, lines 1-6). As shown in the reference, faulty notification message is created when the network detects a faulty node. The faulty node in the group causes disconnection between nodes. However, Shinomiya et al. did not teach the method of a communication failure between two nodes that are not both in the failure notification group. Saleh et al. also teach the method of a communication failure between two nodes that are not both in the failure notification group (see column 4, lines 40-55, and see fig. 2). Each group of

nodes has a boundary node that maintains two databases; one of the databases is for storing link-state of connection between other zones, and to detect link state between its own zone and other zone. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Saleh et al. into the network of Shinomiya et al. The motivation for using the method as taught by Saleh et al. in the network of Shinomiya et al. being that it full restoration may be used between two zones.

Regarding to claim 48, Shinomiya et al. also disclosed the method of a third function for signaling a failure notification to the failure notification group and executing the failure handling method to perform an application level action (see paragraph 0014, lines 1-25). In the reference, once the faulty node is detected by a node, the node will send a fault notification message to other node in a group, where the sending is to perform an application level action. However, Shinomiya et al. did not teach the method of a first function for creating a failure notification group and assigning a unique identifier to the failure notification group; a second function for associating with with the unique identifier of the failure notification group a failure handling method of a distributed application running on some or all of the nodes of the failure notification group. Saleh et al. also teach the method of a first function for creating a failure notification group and assigning a unique identifier to the failure notification group (see column 2, lines 13-20, and see column 5, lines 39-47, and see fig. 2). As shown, the nodes are created into zones or groups, and each zone has a zone ID or unique identifier; a second function for associating with the unique identifier a failure handling method of a distributed

application running on some or all nodes of the failure notification group (see column 4, lines 16-35). Each zone boundary node can be used to limit the flow of topological information. Each zone can be configured to run a separate copy of the topology distribution process, and nodes within each zone are only required to maintain information about their own zone, therefore each node in the zone is running the same application to maintain their zone information. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Saleh et al. into the network of Shinomiya et al. The motivation for using the method as taught by Saleh et al. in the network of Shinomiya et al. being that it full restoration may be used between two zones.

Regarding to claim 49, Shinomiya et al. did not disclose the method of the first function comprising a first parameter representing a set of nodes. Saleh et al. also teach the method of the first function comprising a first parameter representing a set of nodes (see column 2, lines 13-20, and see column 5, lines 39-47, and see fig. 2). As shown, the nodes are created into zones or groups, and each zone has a zone ID, and the zone ID is considered as first parameter representing a set of nodes; and a second parameter returning the unique identifier that is a result of the first function (see column 2, lines 13-20, and see column 5, lines 39-47, and see fig. 2). As shown, the nodes maintains carries two Identifications, first is the zone ID which is the first parameter, and second is the node ID, which is the second parameter.

Regarding to claim 50, Shinomiya et al. did not disclose the method of the first function comprising a first parameter representing a set of nodes a second parameter

representing an application state and a third parameter returning the unique identifier that is a result of the first function. Saleh et al. also teach the method of the first function comprising a first parameter representing a set of nodes (see column 2, lines 13-20, and see column 5, lines 39-47, and see fig. 2). As shown, the nodes are created into zones or groups, and each zone has a zone ID, and the zone ID is considered as first parameter representing a set of nodes; a second parameter representing an application state (Saleh et al. see column 4, lines 55-67) and a third parameter returning the unique identifier that is a result of the first function (see column 2, lines 13-20, and see column 5, lines 39-47, and see fig. 2). As shown, the nodes maintains carries two Identifications, first is the zone ID which is the first parameter, and second is the node ID, which is the third parameter.

Regarding to claim 51, Shinomiya et al. did not disclose the method of the second function comprising a first parameter representing the failure handling method and a second parameter representing the unique identifier. Saleh et al. also teach the method of the second function comprising a first parameter representing the failure handling method (see column 4, lines 27-40). In the reference, the boundary nodes are in the provisioning and restoration of circuits within the network. It can be used to limit the transmission flow, and this can be the first parameter; and a second parameter representing the unique identifier (see Saleh et al. see column 2, lines 13-20, and see column 5, lines 39-47, and see fig. 2). As shown, the nodes are created into zones or groups, and each zone has a zone ID, and the zone ID is considered as second parameter representing a set of nodes.

Regarding to claim 52, Shinomiya et al. did not disclose the method of the third function comprising a first parameter representing the unique identifier. Saleh et al. also teach the method of the third function comprising a first parameter representing the unique identifier (see column 2, lines 13-20, and see column 5, lines 39-47, and see fig. 2). As shown, the nodes are created into zones or groups, and each zone has a zone ID, and the zone ID is considered as first parameter representing a set of nodes.

Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Saleh et al. into the network of Shinomiya et al. The motivation for using the method as taught by Saleh et al. in the network of Shinomiya et al. being that it provides link state information among nodes within each zone to monitor the activeness of each node.

6. Claims 2 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya et al. (Pub No.: 2003/0185148), in view of Saleh et al. (Pat No.: 6801496), as applied to claim 1 above, and further in view of Fortuna (Pat No.: 6778833).

For claims 2 and 24, Shinomiya et al. and Saleh et al. both disclosed all the subject matter of the claimed invention with the exception of disassociating the failure handling method from the unique identifier after the failure is ascertained and the failure handling method has been executed. Fortuna from the same or similar field of endeavor teaches the method of disassociating the failure handling method from the unique identifier after the failure is ascertained and the failure handling method has been executed (see column 10, lines 35-40). As shown in the reference, the identifier is being

removed or disassociated from method 60. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Fortuna in the network of Shinomiya et al. and Saleh et al. The motivation for using the method as taught by Fortuna in the network of Shinomiya et al. and Saleh et al. being that it eliminate identifiers and to reserve more bandwidth.

7. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya et al. (Pub No.: 2003/0185148), in view of Saleh et al. (Pat No.: 6801496), as applied to claim 3 above, and further in view of Lotter et al. (Pat No.: 7218645).

For claim 4, Shinomiya et al. and Saleh et al. both disclosed all the subject matter of the claimed invention with the exception of creating a failure notification group includes executing the failure handling method if each node in the failure notification group is not successfully contacted. Lotter et al. from the same or similar fields of endeavor teaches the method of creating a failure notification group includes executing the failure handling method if each node in the failure notification group is not successfully contacted (see column 11, lines 22-30). In the reference, the radio link optimizer 200 will perform the optimization method even not all information are available, which is same or similar idea as if each node in the group is not successfully contacted, the method will still performed based on the available information. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Lotter et al. in the network of Shinomiya et al.

and Saleh et al. The motivation for using the method as taught by Lotter et al. in the network of Shinomiya et al. and Saleh et al. being that improves the QoS by shorten the latency of contacting nodes.

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya et al. (Pub No.: 2003/0185148), in view of Saleh et al. (Pat No.: 6801496), as applied to claim 1 above, and further in view of Rabie et al. (Pat No.: 7092356).

For claim 5, Shinomiya et al. and Saleh et al. both disclosed all the subject matter of the claimed invention with the exception of sending an invitation message containing an application state and the unique identifier to each node of the failure notification group; and verifying that each member of the failure notification group received the invitation message. Rabie et al. from the same or similar fields of endeavor teaches the method of sending an invitation message containing an application state and the unique identifier to each node of the failure notification group (see column 2, lines 25-65, and see fig 1.). As shown, each node in a network is able to send information to every other node regarding the state of all of its links; As shown in the reference, the sending state information can be the link status, and QoS, and reach-ability information (unique identifier) of the node; and verifying that each member of the failure notification group received the invitation message (see column 2, lines 25-65, and see fig 1.). As revealed in the reference, each node received the state information will be maintained in its own database. The state information also includes two parameters: a) Non-additive link, and Additive link, and two kinds of CAC, the actual

CAC utilizes an accurate algorithm which verifies the QoS in each nodes, which also verifies the receipt of state information in each node inherently. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Rabie et al. in the network of Shinomiya et al. and Saleh et al. The motivation for using the method as taught by Rabie et al. in the network of Shinomiya et al. and Saleh et al. being that the state information contains plurality of information, and it provides convenience to all nodes to retrieve information.

9. Claims 14 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya et al. (Pub No.: 2003/0185148), in view of Saleh et al. (Pat No.: 6801496), as applied to claim 1 above, and further in view of Havansi (Pat No.: 5905714).

For claims 14 and 31, Shinomiya et al. and Saleh et al. both disclosed all the subject matter of the claimed invention with the exception of the failure is ascertained from an application pinging each node in the failure notification group, and determining the failure when a response to a ping is not received. Havansi from the same or similar fields of endeavor teaches the method of the failure is ascertained from an application pinging each node in the failure notification group, and determining the failure when a response to a ping is not received (see column 3, lines 36-50). In the reference, the ping-pong type of message exchange, which has the advantage that it will allow the condition of the whole connection to be tested. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught

by Havansi in the network of Shinomiya et al. and Saleh et al. The motivation for using the method as taught by Havansi in the network of Shinomiya et al. and Saleh et al. being that pinging nodes to measure the aliveness in the nodes.

10. Claims 15 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya et al. (Pub No.: 2003/0185148), in view of Saleh et al. (Pat No.: 6801496), as applied to claim 1 above, and further in view of Greaves et al. (Pat No.: 6396815).

For claims 15 and 32, Shinomiya et al. and Saleh et al. both disclosed all the subject matter of the claimed invention with the exception of the nodes in the failure notification group have a spanning tree topography, wherein the failure is ascertained from an application pinging adjacent nodes in the spanning tree, and determining the failure when a response to a ping is not received. Greaves et al. from the same or similar fields of endeavor teaches the method of the nodes in the failure notification group have a spanning tree topography, wherein the failure is ascertained from an application pinging adjacent nodes in the spanning tree, and determining the failure when a response to a ping is not received (see column 18, lines 1-20, and see fig. 3). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Greaves et al. in the network of Shinomiya et al. and Saleh et al. The motivation for using the method as taught by Greaves et al. in the network of Shinomiya et al. and Saleh et al. being that it provides point to multipoint transmission.

11. Claims 16 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya et al. (Pub No.: 2003/0185148), in view of Saleh et al. (Pat No.: 6801496), as applied to claim 1 above, and further in view of Liu et al. (Pub No.: 2005/0068954).

For claims 16 and 33, Shinomiya et al. and Saleh et al. both disclosed all the subject matter of the claimed invention with the exception of the nodes in the failure notification group are a subset of nodes in an overlay network, wherein creating a failure notification group includes creating a multicast tree by sending a construction message to each node in the failure notification group. Liu et al. from the same or similar fields of endeavor teaches the method of the nodes in the failure notification group are a subset of nodes in an overlay network, wherein creating a failure notification group includes creating a multicast tree by sending a construction message to each node in the failure notification group (see paragraph 0007, lines 1-10, and see paragraph 0042, lines 1-10, and see fig. 2). As revealed in the reference, the invention establishes transmission header (construction message) based the knowledge of the addresses of receiver nodes at a sender node, and distributes the transmission header to the nodes. As shown in fig. 2, there are two sub-tree groups in a network. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Liu et al. in the network of Shinomiya et al. and Saleh et al. The

motivation for using the method as taught by Liu et al. in the network of Shinomiya et al. and Saleh et al. being that it provides point to multipoint transmission.

12.. Claims 17, 19-22, and 36-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya et al. (Pub No.: 2003/0185148), in view of Saleh et al. (Pat No.: 6801496), and Liu et al. (Pub No.: 2005/0068954), as applied to claim 16 above, and further in view of Izmailov et al. (Pub No.: 2005/0015511).

For claim 17, Shinomiya et al. disclosed the method of nodes in the overlay routing path record pointers to adjacent nodes in the overlay routing path (see paragraph 0014, lines 1-25). As revealed in the reference, the new spare path information is updated in the database, which in this case, the spare path information is the alternative path to other node, and it can be interpreted as a pointer, and the spare path is recorded into database. However, Shinomiya et al. Saleh et al. and Liu et al. did not disclosed the method of the construction message is routed to each node in the failure notification group through an overlay routing path. Izmailov et al. from the same or similar fields of endeavor teaches the method of the construction message is routed to each node in the failure notification group through an overlay routing path (see paragraph 0043, lines 1-10, and see paragraph 0080, lines 1-10). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Izmailov et al. in the network of Shinomiya et al. and Saleh et al. and Liu et al. The motivation for using the method as taught by Izmailov et al. in the

network of Shinomiya et al. and Saleh et al. and Liu et al. being that it provides point to multipoint transmission, and each node in the network can be monitored or inferred.

Regarding to claim 19, Izmailov et al. also disclosed the method of ascertaining the failure includes ascertaining that a communication link to a node in the overlay network has failed, and determining whether the node was a member of the multicast tree (see paragraph 0075, lines 1-12). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Izmailov et al. in the network of Shinomiya et al. and Saleh et al. and Liu et al. The motivation for using the method as taught by Izmailov et al. in the network of Shinomiya et al. and Saleh et al. and Liu et al. being that it provides point to multipoint transmission, and each node in the network can be monitored or inferred.

Regarding to claim 20, Shinomiya et al. also disclosed the method of if the node was a member of the multicast tree, signaling a failure notification to adjacent nodes in the multicast tree (see paragraph 0014, lines 1-25). In the reference, once a faulty node is detected by a node, the node will send a fault notification message to its neighbor.

Regarding to claim 21, Shinomiya et al. also disclosed the method of if the node was a member of the multicast tree, signaling a failure notification to adjacent nodes in the multicast tree by not responding to messages from the adjacent nodes (see paragraph 0014, lines 1-25). In the reference, once a faulty node is detected by a node, the node will send a fault notification message to its neighbor.

Regarding to claim 22, Shinomiya et al. also disclosed the method of if the node was a member of the multicast tree, executing the failure handling method (see

paragraph 0014, lines 1-25). In the reference, once a faulty node is detected by a node, the node will send a fault notification message to its neighbor. The spare path design method is used, which can be interpreted as failure handling method.

Regarding to claim 36, Izmailov et al. also disclosed the method of ascertaining the failure includes ascertaining that a communication link to a node in the overlay network has failed, and determining whether the node was a member of the multicast tree (see paragraph 0075, lines 1-12). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Izmailov et al. in the network of Shinomiya et al. and Saleh et al. The motivation for using the method as taught by Izmailov et al. in the network of Shinomiya et al. and Saleh et al. being that it provides point to multipoint transmission, and each node in the network can be monitored or inferred.

Regarding to claim 37, Shinomiya et al. also disclosed the method of if the node was a member of the multicast tree, signaling a failure notification to adjacent nodes in the multicast tree (see paragraph 0014, lines 1-25). In the reference, once a faulty node is detected by a node, the node will send a fault notification message to its neighbor.

Regarding to claim 38, Shinomiya et al. also disclosed the method of if the node was a member of the multicast tree, signaling a failure notification to adjacent nodes in the multicast tree by not responding to messages from the adjacent nodes (see paragraph 0014, lines 1-25). In the reference, once a faulty node is detected by a node, the node will send a fault notification message to its neighbor.

Regarding to claim 39, Shinomiya et al. also disclosed the method of if the node was a member of the multicast tree, executing the failure handling method (see paragraph 0014, lines 1-25). In the reference, once a faulty node is detected by a node, the node will send a fault notification message to its neighbor. The spare path design method is used, which can be interpreted as failure handling method.

13. Claims 40, 42, 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya et al. (Pub No.: 2003/0185148), in view of Liu et al. (Pub No.: 2005/0068954).

For claim 40, Shinomiya et al. disclosed the method of ascertaining a failure in a communication link to an adjacent node in the tree; and signaling a failure notification when the failure is ascertained (see paragraph 0014, lines 1-25). In the reference, once the faulty node is detected by a node, the node will send a fault notification message to other node in the group. However, Shinomiya et al. did not disclose the method of joining a failure notification tree; receiving a first message from a creator node through an overlay routing path; recording a pointer to an overlay node from which the first message was received; and forwarding the first message to a node in the failure communication group via a next node in the overlay routing path; receiving a second message from the node in the failure notification group through the overlay routing path; recording a pointer to an overlay node from which the second message was received and forwarding the second message to the creator node via the overlay node from

which the first message was received. Liu et al. from the same or similar fields of endeavor teaches the method of joining a failure notification tree (see paragraph 0020, lines 1-10, and see fig. 2). As shown in figure 2, there are two groups of subtrees (20, 21). The group is classified based on the communication network addresses; receiving a first message from a creator node through an overlay routing path; recording a pointer to an overlay node from which the first message was received; and forwarding the first message to a node in the failure communication group via a next node in the overlay routing path (see paragraph 0020, lines 1-10, paragraph 0043, lines 1-12, paragraph 0044, lines 1-10, and see fig. 4). In fig. 4, the n2 is the creator or the source of its sub-children nodes (n4, n7, and n8), and n3 is another creator or source of its sub-children nodes (n5, n9, n6 and etc..). Each creator node maintains an index of its sub-children addresses for the purpose of performing the failure handling method or the header processing method. When the creator node n2 detects a failure at n4, the creator will transmit the first message to n7 according to its index, and update or record the routing information in its index. Although the node n7 doesn't have its sub-nodes, however, it would have been obvious for n7 to forward the message to its sub-nodes; receiving a second message from the node in the failure notification group through the overlay routing path; recording a pointer to an overlay node from which the second message was received and forwarding the second message to the creator node via the overlay node from which the first message was received (see paragraph 0020, lines 1-10, paragraph 0043, lines 1-12, paragraph 0044, lines 1-10, and see fig. 4). In fig. 4, the n2 is the creator or the source of its sub-children nodes (n4, n7, and n8), and n3 is another

creator or source of its sub-children nodes (n5, n9, n6 and etc..). Each creator node maintains an index of its sub-children addresses for the purpose of performing the failure handling method or the header processing method. When the creator node n2 detects a failure at n4, the creator will transmit the second message to n8 according to its index, and update or record the routing information in its index. Although the node n8 doesn't have its sub-nodes, however, it would have been obvious for n8 to forward the message to its sub-nodes. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Liu et al. in the network of Shinomiya et al. The motivation for using the method as taught by Liu et al. in the network of Shinomiya et al. being that it provides point to multipoint transmission, and each node in the network can be monitored or inferred.

Regarding claim 42, Shinomiya et al. disclosed the method of recording a pointer to the next node (Shinomiya et al. see paragraph 0014, lines 1-25). As revealed in the reference, the new spare path information is updated in the database, which in this case, the spare path information is the alternative path to next node, and it can be interpreted as a pointer, and the spare path is recorded into database.

Regarding to claim 45, Shinomiya et al. also disclose the method of ascertaining a failure includes having failed to repair the failure notification group one or more times (see paragraph 0054, lines 1-5). In the reference, the method is used to repair the failed node by switching to a difference path.

14. Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya et al. (Pub No.: 2003/0185148), in view of Liu et al. (Pub No.: 2005/0068954), as applied to claim 40 above, and further in view of Saleh et al. (Pat No.: 6801496).

For claim 44, Shinomiya et al. also disclose the method of ascertaining a failure includes distinguishing between a communication failure between two nodes that are both in the failure notification group (see paragraph 0046, lines 1-6). As shown in the reference, faulty notification message is created when the network detects a faulty node. The faulty node in the group causes disconnection between nodes. However, Shinomiya et al. and Liu et al. did not disclose the method of a communication failure between two nodes that are not both in the failure notification group. Saleh et al. from the same or similar fields of endeavor teaches the method of a communication failure between two nodes that are not both in the failure notification group (see column 4, lines 40-55, and see fig. 2). Each group of nodes has a boundary node that maintains two databases; one of the databases is for storing link-state of connection between other zones, and to detect link state between its own zone and other zone. Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Saleh et al. into the network of Shinomiya et al. and Liu et al. The motivation for using the method as taught by Saleh et al. in the network of Shinomiya et al. and Liu et al. being that it full restoration may be used between two zones.

15. Claims 46, 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shinomiya et al. (Pub No.: 2003/0185148), in view of Liu et al. (Pub No.: 2005/0068954), as applied to claim 40 above, and further in view of Izmailov et al. (Pub No.: 2005/0015511).

For claim 46, Shinomiya et al. and Liu et al. did not disclose the method of ascertaining the failure includes ascertaining that a communication link to a node in the overlay network has failed, and determining whether the node was a member of the multicast tree. Izmailov et al. from the same or similar fields of endeavor teaches the method of ascertaining the failure includes ascertaining that a communication link to a node in the overlay network has failed, and determining whether the node was a member of the multicast tree (Izmailov et al. see paragraph 0075, lines 1-12). Thus, it would have been obvious to the person of ordinary skill in the art at the time of the invention to use the method as taught by Izmailov et al. into the network of Shinomiya et al. and Liu et al. The motivation for using the method as taught by Izmailov et al. into the network of Shinomiya et al. and Liu et al. being that it full restoration may be used between two zones.

Regarding claim 47, Shinomiya et al. disclosed the method of if the node was a member of the multicast tree, signaling a failure notification to adjacent nodes in the multicast tree by not responding to messages from the adjacent nodes (Shinomiya et al. see paragraph 0014, lines 1-25). In the reference, once a faulty node is detected by a node, the node will send a fault notification message to its neighbor.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kan Yuen whose telephone number is 571-270-2413. The examiner can normally be reached on Monday-Friday 10:00a.m-3:00p.m EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky O. Ngo can be reached on 571-272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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